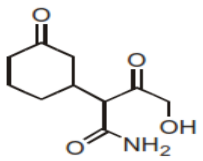
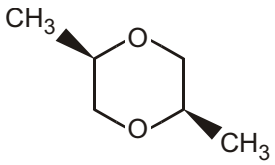
1. Functional group not present in given compound is/are?



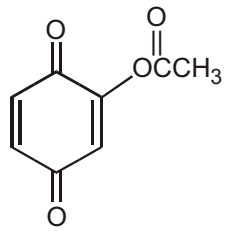
(A) Alcohol (B) Ketone (C) Carboxylic acid (D) Amide

2. Present functional group is :



(A) ketone (B) ester (C) ether (D) alcohol

3. Present functional group is/ are :



(A) ketone (B) ester (C) ether (D) A and B both

4. What is the lowest molecular weight possible for Ester?

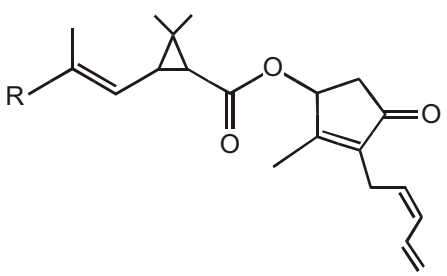
(A) 30 (B) 46 (C) 56 (D) 60

5. Which of the following compounds belong to the same homologous series ?

(1) 1-chloropropene (2) 1-chloropropane (3) 2-chlorobutane

(A) (1) and (2) only (B) (1) and (3) only (C) (2) and (3) only (D) (1), (2) and (3)

6. Pyrethrum flowers contain a natural insecticide called pyrethrin. Pyrethrin has the following structure:



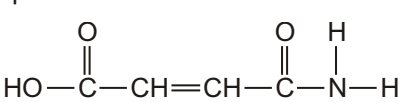
Which of the following functional groups are present in pyrethrin?

(1) Carbon-carbon double bond (2) Ester group

(3) Ketone group

(A) (1) and (2) only (B) (1) and (3) only (C) (2) and (3) only (D) (1), (2) and (3)

7. Consider the following compound :



Which of the following functional groups does it contain?

(1) Carboxyl group (2) Carbonyl group (3) Amide group

(A) (1) and (2) only (B) (1) and (3) only (C) (2) and (3) only (D) (1), (2) and (3)

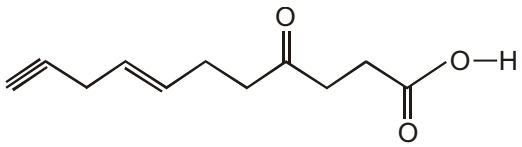
8. Which of the following statements is/are correct?

(1) Two organic compounds with the same general formula must belong to the same homologous series.

(2) Two organic compounds with main functional groups the same must belong to the same homologous series.

(3) Two organic compounds with the molecular mass differing by 14 must belong to the same homologous series.

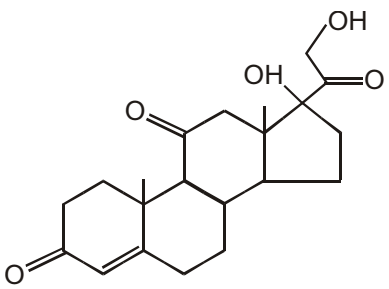
(A) (1) only (B) (2) only (C) (1) and (3) only (D) (2) and (3) only

9. 

Number of Functional group in above compound is

(A) 3 (B) 4 (C) 5 (D) 6

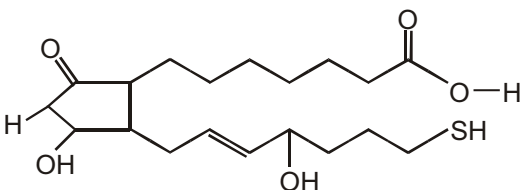
10. The functional groups in Cortisone are :



Cortisone

(A) Ether, alkene, alcohol (B) Alcohol, ketone, alkene

(C) Alcohol, ketone, amine (D) Ether, amine ketone

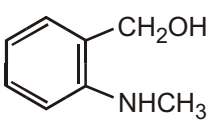
11. 

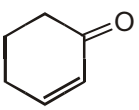
How many types of functional groups are present in given compound.

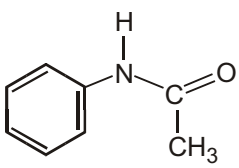
(A) 6 (B) 5 (C) 4 (D) 7

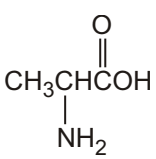
UNSOLVED EXAMPLE

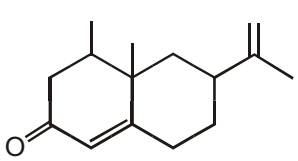
1. Locate and identify the functional groups in the following molecules.

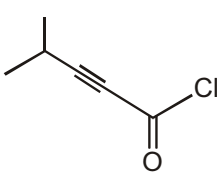
(a) 

(b) 

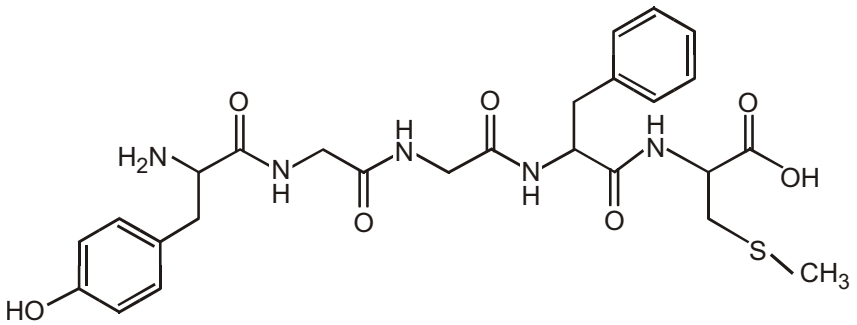
(c) 

(d) 

(e) 

(f) 

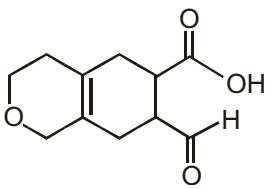
2. Met-enkephalin, an endorphin, serves as natural pain reliever that changes or removes the perception of nerve signals. Label all of the functional groups present in Met-enkephalin.



3. *x* Types of functional group

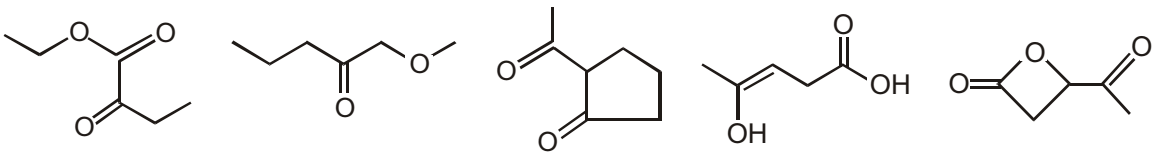
y Double bond equivalent

Value of (*x* *y*) in given compound is :



(A) 7 (B) 8 (C) 9 (D) 10

4. Which compound can be classified as an ester as well as a Ketone?

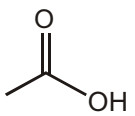


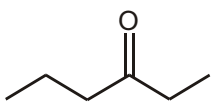
(A) (B) (C) (D) (E)

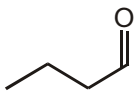
(A) A, B, E (B) E, B, C (C) A, E (D) C, E

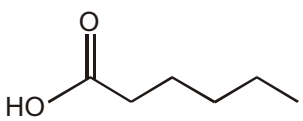
WORK SHEET

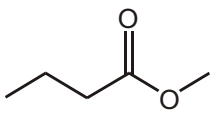
1. For each molecule circle and name the functional group. If the functional group is an amine identify it as a primary (1°), secondary (2°), or tertiary (3°) amine. some molecules will have more than one functional group; in those case circle and name all functional groups present. functional groups: Aldehyde, ketone, carboxylic acid, ester, amide, amine.

(a) 

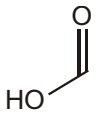
(b) 

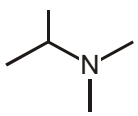
(c) 

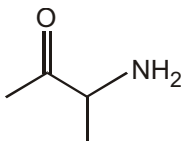
(d) 

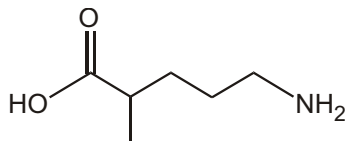
(e) 

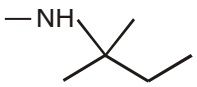
(f) CH_3COOH

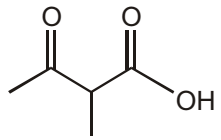
(g) 

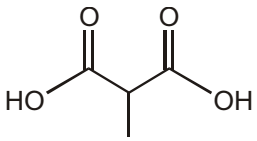
(h) 

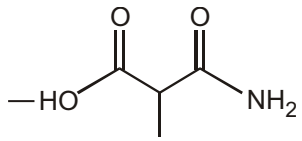
(i) 

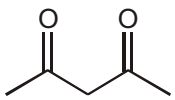
(j) 

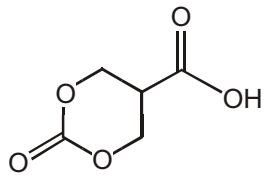
(k) 

(l) 

(m) 

(n) 

(o) 

(p) 

(q) HCHO

(r) HCOOH

(s) $CH_3(CO)CH_3$

SUBJECTIVE TYPE QUESTIONS

1. Suggest at least six different structures that would fit the formula C_4H_7NO. Make good realistic diagrams of each one and identify which functional groups(s) are present.

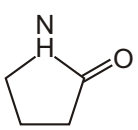
Purpose of the Problem

The identification and naming of functional groups is more important than the naming of compounds. This was your chance to experiment with different functional groups as well as different carbon skeletons.

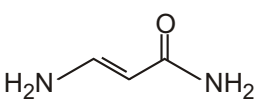
Suggested solution

You will have found the carbonyl and amino groups very useful, but did you also use alkenes and alkynes, rings, ethers, alcohols, and cyanides? Here are twelve possibilities but there are many more. The functional group names in brackets are alternatives. Some you will not have known. You need not to have classify the alcohols and amines.

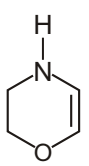
alkyne, primary alcohol, primary amine



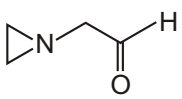
cyclic amide



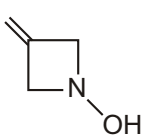
Amide, alkene, primary amine (enamine)



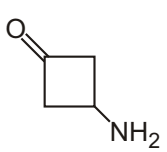
Ether, alkene, secondary amine



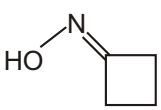
cyclic tertary amine, aldehyde



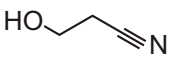
alkene, secondary amine, alcohol (cyclic hydroxylamine)



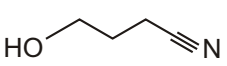
cyclic ketone, primary amine



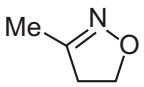
oxime, imine + alcohol



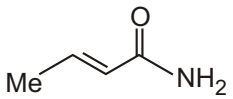
alcohol, nitrile (cyanide)



primary alcohol, nitrile (cyanide)



imine, ether (isoxazoine)



alkene, primary amide

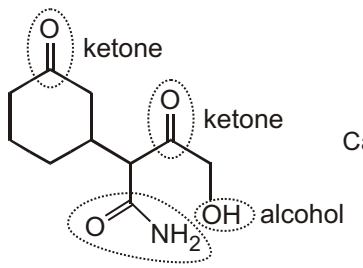
Answers

Single Choice Questions

1. (C) **2.** (C) **3.** (D) **4.** (D) **5.** (C) **6.** (D) **7.** (B) **8.** (B)

9. (B) **10.** (B) **11.** (B)

1.



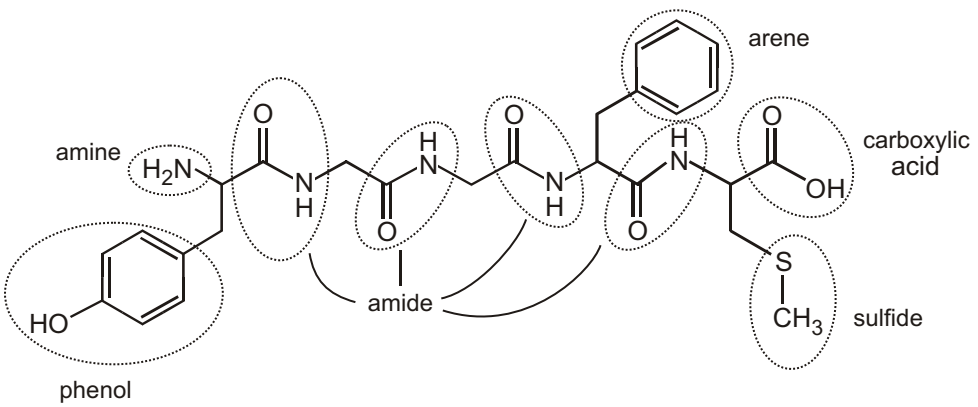
Carboxylic acid is not present

Unsolved Example

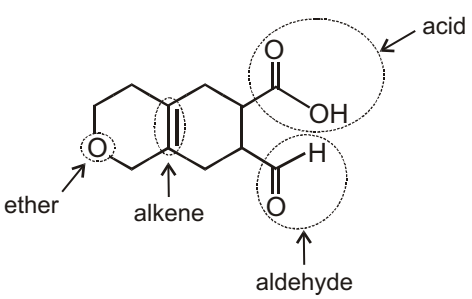
1. **(a)** alcohol, amine **(b)** ketone, alkene **(c)** amide

(d) carboxylic acid, amine **(e)** ketone,alkene **(f)** acyl halide, alkyne

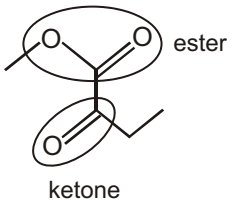
2.

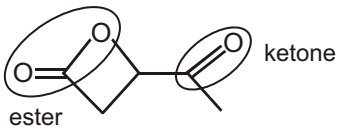


3.

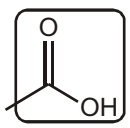


4.

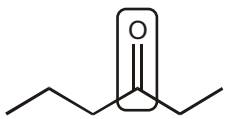




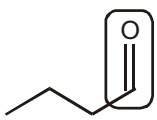
Work Sheet

1. (a) 

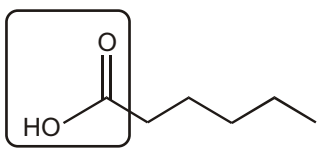
, carboxylic acid

(b) 

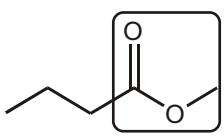
, ketone

(c) 

, aldehyde

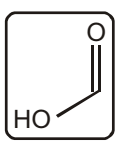
(d) 

, carboxylic acid

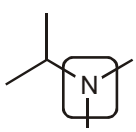
(e) 

, ester

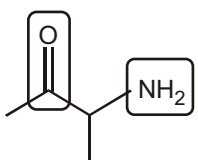
(f) CH_3 COOH or H_3C — C — OH, carboxylic acid

(g) 

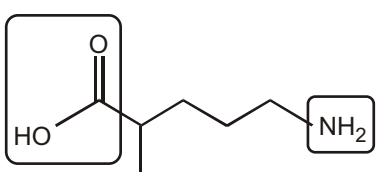
, carboxylic acid

(h) 

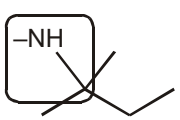
, 3° amine

(i) 

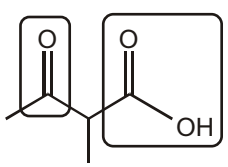
, ketone and 1º amine

(j) 

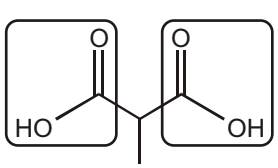
, carboxylic acid and 1°amine

(k) 

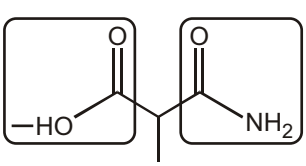
, 2° amine

(l) 

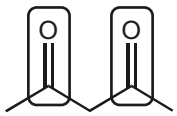
, ketone and carboxylic acid

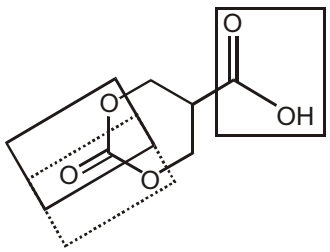
(m) 

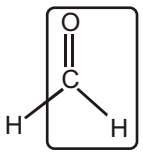
, 2 carboxylic acids

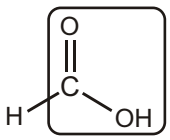
(n) 

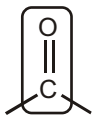
Carboxylic acid , and amide

(o)  , 2 ketones

(p)  , 2 esters and 1 carboxylic acid

(q)  , aldehyde

(r)  or , H COOH , carboxylic acid

(s)  , ketone